

rise of the earth causing a lowering of temperature with the consequent formation of glaciers, the weight of the ice sheet in turn causing the crust to sink back, raising the temperature and melting the ice. This is traced through four periods, the maximum rise of land in each period being less than in the preceding. Thus it is demonstrated that the "climates of the world are the result of geographical conditions of the world," and "that within certain limits climatic and geographic conditions react one on another to produce continuous though very slow changes in both."—*C. L. M.*

PERIODICITY OF WINTER TEMPERATURES IN WESTERN EUROPE.¹

By C. EASTON.

[Reprinted from Science Abstracts, Sect. A, Sept. 30, 1918, §913.]

All available data are collected and carefully sifted, reports of exceptionally mild winters being used in addition to those of severe ones.

¹ Physikalische Zeitschrift, June 1, 1918, 19: 234-237.

Each abnormal winter is given a coefficient of temperature ranging between +5 and -5, the remaining winters being marked zero. The series covers 1,157 years. The data are investigated with a view to determining periodicities. An 89-year period is traced and it is further found that in the past 65 years, for which reliable thermometric observations are available, the temperature sequence of this 89-year period can be clearly followed, thus affording confirmation of its reality. The chief features of the fluctuation are that in the first quarter of the 89 years cold winters prevail and in the last quarter warm ones. A sine wave of 44½ years seems to be an important part of the 89-year fluctuation. It is considered that the results are sufficiently definite to be of some assistance in long-range forecasting. No evidence is found of a gradually increasing or decreasing frequency of severe winters in historical times.²—*J. S. Dines.*

² See also review in Geogr. Rev., 1918, 4: 398.

BIBLIOGRAPHY.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Professor in Charge of Library.

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Bavaria. Meteorologische Centralstation.

Deutsches meteorologisches Jahrbuch für 1914-15. Jahrgang 36-37. München. 1916-19. 2v. charts (part. fold.) tables. 33 cm.

Cienfuegos. Colegio "Nstra. Snra. de Montserrat." Observatorio.

Anales. No. 8. Observaciones meteorológicas de 1918. Habana. 1919. tables. 32½ cm.

Colombo. Observatory.

Report for the year 1918. Colombo. 1919. 2 p. 1., J1-J20 p. charts (part. fold.) tables. 33½ cm. (Reprinted from the Ceylon blue book for 1918.)

Dorno, [Carl Wilhelm Max].

Welchen Nutzen bringen die Polarisationsbeobachtungen der atmosphärischen Optik, Meteorologie, Geophysik und Astronomie? charts (part. fold.) 23½ cm. (In Mitteilungen der Vereinigung von Freunden der Astronomie und kosmischen Physik, Berlin. 29 Jahrg. Heft 6/7. Sept. 1919. p. 71-86.)

Easton, [Cornelis].

Periodicity of winter temperatures in western Europe, since A. D. 760. Amsterdam, [1917.] cover-title. 16 p. fold. chart. 5 tables. 26½ cm. (Reprinted from Proceedings. Vol. 20. No. 8. K. Akademie van wetenschappen te Amsterdam.) [Reviews: Geogr. Rev., 1917, 4: 398; and this page, above.]

Ellis, Arthur J.

Geology and ground waters of the western part of San Diego county, California, by A. J. Ellis and C. H. Lee. . . . Washington. 1919. 321 p. plates. maps (part. fold.) charts (part. fold.) tables. diagrs. (part. fold.) 23½ cm. At head of title: Department of the interior. U. S. Geological survey. Water-supply paper 446. "Publications consulted," p. 288-290. [Includes extensive data of precipitation and evaporation, largely from non-Weather Bureau stations.]

Fontseré [y Ribá], Eduardo.

Movimiento de las nubes altas y medias en el zenit de Barcelona. Con la colaboración de D. G. Campo Cunchillos. Barcelona. 1919. 11 p. charts. tables. 29½ cm. At head of title: Memorias de la Real academia de ciencias y artes de Barcelona. Tercera época. Vol. 15. Núm. 8.

Great Britain. Meteorological office.

Codex of resolutions adopted at International meteorological meetings. Supplement summarising the resolutions adopted by the International meteorological committee meetings held in Berlin, 1910, and Rome, 1913. London. 1919. 12 l., 25 cm. M. O. No. 200.

Professional notes no. 4-7. London. 1919. 4v. charts. tables. 24½ cm. M. O. 232d-g. Contents: (4) Upper air temperatures at Martlesham Heath, Feb. 1917 to Jan. 1918, by W. F. Stacey. (5) On the use of the normal curve of errors in classifying observations in meteorology, by E. H. Chapman. (6) The variation of wind velocity with height, by E. H. Chapman. (7) The climate of north-west Russia. [See abstracts, MONTHLY WEATHER REVIEW, Aug., 1919, 47: 572.]

Great Britain. Meteorological office. Advisory committee on atmospheric pollution.

Report on observations in the year 1917-18. Forming the 4th report of the committee for the investigation of atmospheric pollution. London. [1919] 23 p. illus. tables. charts. 29 cm.

Grover, Nathan C[lifford].

Surface water supply of Hawaii, July 1, 1917 to June 30, 1918. . . . Washington. 1919. 172 p. tables. 23 cm. At head of title: Department of the interior. U. S. Geological survey. Water-supply paper 485. [Rainfall, p. 163-167.]

Guam. Agricultural experiment station.

Report, 1918. Washington. 1919. 61 p. plates. tables. 23½ cm. [Meteorological observations, July, 1917-June, 1918, incl. Observations were taken in Guam during the fiscal years 1912-1914 and recommenced on July 1, 1917.]

Guernsey. Meteorological station.

Observations météorologiques, 1918. Guernsey. 1919. 20. p. tables. 28 cm.

Hartman, C. M. A.

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Annual report of the meteorological observatory of the Government-general of Chosen for the year 1917. Jinsen. 1919. 4 p. l., 134 p. fold. map. tables. 30½ cm. Final leaf in Japanese.